

Best Practices in-Site Data Management, Analysis, and 2-D and 3-D Geospatial Visualization Tools from Hazardous Waste Site Investigation Activities

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(On detail from Office of Solid Waste and Emergency Response [OSWER])

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U.S. EPA ORD/NERL/ESD/LEB, Environmental Photographic Interpretation Center, on detail from OSWER/Office of Superfund Remediation and Technology Innovation (OSRTI)

Keywords: visualization, Superfund, geospatial, graphical, hazardous waste site

This poster presents a review of “best practices” in presenting hazardous waste site investigations, supported by submissions from members of the American Consulting Engineers Council (ACEC).

Hazardous waste site investigations involve evaluations of multiple media including soil, sediment, surface water, groundwater, and air. Thousands of samples are collected and analyzed to determine the existence and extent of contamination and possible routes of exposure. The use of geostatistics can make the investigation and remediation of contaminated sites more efficient. Effective presentation of the results can facilitate the development of a site conceptual model and an understanding of site contamination. This understanding can assist the site manager to investigate alternatives for remediation, the regional decision-maker to evaluate proposed remedies, and the public to understand the site contamination and proposed cleanup action. In addition, as sites come under statutory-required five-year reviews and have institutional controls imposed on them, the need to review and evaluate site conditions in a consistent fashion with graphical presentations becomes more critical.

The U.S. Environmental Protection Agency (U.S. EPA) site managers are using a number of tools at Superfund sites to manage data, analyze site information, and present 2-D and 3-D visualizations of site contamination. The electronic access to chemical and geospatial data about sites is essential for current and future assessments of hazardous waste sites, and obtaining and maintaining the data in standard formats is an important step in data management. Site analysis can involve graphical presentation of the data using GIS and other visualization tools. Some site managers develop databases, desktop GIS projects, Web-based geospatial analyses, and 2-D and 3-D visualizations. ACEC members have submitted examples of Superfund site analyses involving site investigations, remedial design, remedial actions, oversight work, and optimization of remedies. A review of a number of submissions has identified some best practices in-site analyses and some “lessons learned” that can be applied to future efforts.

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